IN THE CLAIMS:

Please cancel Claims 1-60 and add the following new claims:

1 through 60 (Canceled)

61. (New) A stereo synthesizing apparatus to produce a pair of output signals from a single input signal comprising:

an input configured to receive an input signal;

a filter operatively coupled to the input to produce a first filtered signal and a second filtered signal, wherein the first filtered signal and the second filtered signal have a relatively constant phase difference over a range of frequencies; and

a mixer that adds at least a portion of the first filtered signal with at least a portion of the second filtered signal to produce a left output signal and subtracts at least a portion of the second filtered signal from at least a portion of the first filtered signal to produce a right output signal.

62. (New) The stereo synthesizing apparatus of Claim 61 wherein the relatively constant phase difference is approximately 90°.

63. (New) The stereo synthesizing apparatus of Claim 61 wherein the filter is an all-pass filter.

64. (New) The stereo synthesizing apparatus of Claim 61 wherein the stereo synthesizing apparatus is a digital signal processor.

65. (New) The stereo synthesizing apparatus of Claim 61 further comprising software, which implements the filter and the mixer.

66. (New) The stereo synthesizing apparatus of Claim 61 wherein the filter comprises a first all-pass filter having a leading phase shift and a second all-pass filter having a lagging phase shift.

67. (New) The stereo synthesizing apparatus of Claim 61 wherein the mixer comprises a first mixer and a second mixer, wherein the first mixer is an adder and the second mixer is a subtractor.

68. (New) The stereo synthesizing apparatus of Claim 61 wherein the left output signal and the right output signal have the relatively constant phase difference over the range of frequencies.

69. (New) A method of synthesizing a pair of output signals from a single input signal comprising:

filtering an input signal to produce a first filtered signal and a second filtered signal, wherein the first and second filtered signals have a relatively constant phase difference over a range of frequencies;

combining at least a portion of the first filtered signal with at least a portion of the second filtered signal to produce a left output signal; and

combining at least a portion of the first filtered signal and at least a portion of the second filtered signal to produce a right output signal.

70. (New) The method of Claim 69 wherein the first filtered signal and the second filtered signal are approximately in quadrature.

71. (New) The method of Claim 69 wherein the relatively constant phase difference is approximately 90°.

72. (New) The method of Claim 69 wherein combining to produce the left output signal is adding and combining to produce the right output signal is subtracting.

73. (New) The method of Claim 69 wherein the left output signal and the right output signal have the relatively constant phase difference over the range of frequencies.

74. (New) The method of Claim 73 wherein the relatively constant phase difference is approximately 90°.

75. (New) A stereo synthesizing apparatus to produce a pair of output signals from a single input signal comprising:

an input configured to receive an input signal;

a filter operatively coupled to the input to produce a first filtered signal and a second filtered signal, wherein the first filtered signal and the second filtered signal have a relatively constant phase difference over a range of frequencies;

a mixer that adds at least a portion of the first filtered signal with at least a portion of the second filtered signal to produce a left output signal and subtracts at least a portion of the second filtered signal from at least a portion of the first filtered signal to produce a right output signal; and

an enhancement circuit coupled to the left output signal and the right output signal to widen a listening area of the left and right output signals.

76. (New) The stereo synthesizing apparatus of Claim 75 wherein the relatively constant phase difference is approximately 90°.

77. (New) The stereo synthesizing apparatus of Claim 75 wherein the filter is an all-pass filter.

78. (New) The stereo synthesizing apparatus of Claim 75 wherein the stereo synthesizing apparatus is a digital signal processor.

79. (New) The stereo synthesizing apparatus of Claim 75 further comprising software, which implements the filter and the mixer.

80. (New) The stereo synthesizing apparatus of Claim 75 wherein the filter comprises a first all-pass filter having a leading phase shift and a second all-pass filter having a lagging phase shift.

81. (New) The stereo synthesizing apparatus of Claim 75 wherein the mixer comprises a first mixer and a second mixer, wherein the first mixer is an adder and the second mixer is a subtractor.

82. (New) The stereo synthesizing apparatus of Claim 75 wherein the left output signal and the right output signal have the relatively constant phase difference over the range of frequencies.

83. (New) A method for audio signal processing comprising:

filtering an input signal to produce a first filtered signal and a second filtered signal, wherein the first and second filtered signals have a relatively constant phase difference over a range of frequencies;

combining at least a portion of the first filtered signal with at least a portion of the second filtered signal to produce a first output signal;

combining at least a portion of the first filtered signal and at least a portion of the second filtered signal to produce a second output signal; and

enhancing the first and second output signals.

84. (New) The method of Claim 83 wherein the first filtered signal and the second filtered signal are approximately in quadrature.

85. (New) The method of Claim 83 wherein the relatively constant phase difference is approximately 90°.

86. (New) The method of Claim 83 wherein combining to produce the left output signal is adding and combining to produce the right output signal is subtracting.

87. (New) The method of Claim 83 wherein the first output signal and the second output signal have the relatively constant phase difference over the range of frequencies.

88. (New) The method of Claim 87 wherein the relatively constant phase difference is approximately 90°.

89. (New) A stereo synthesizing apparatus to produce left and right pseudo-stereophonic output signals from a monophonic signal comprising:

an input configured to receive a monophonic signal;

a first filter operatively coupled to the input to produce first digital information;

a second filter operatively coupled to the input to produce second digital information, wherein the first digital information and the second digital information have a relatively constant phase difference over a range of frequencies;

a first combiner that adds at least a portion of the first digital information with at least a portion of the second digital information to produce left output information; and

a second combiner that subtracts at least a portion of the second digital information from at least a portion of the first digital information to produce right output information.

90. (New) The stereo synthesizing apparatus of Claim 89 wherein relatively constant phase difference is approximately 90°.

91. (New) The stereo synthesizing apparatus of Claim 89 wherein the first filter and the second filter are all-pass filters.

92. (New) The stereo synthesizing apparatus of Claim 89 wherein the stereo synthesizing apparatus is a digital signal processor.

93. (New) The stereo synthesizing apparatus of Claim 89 further comprising software which implements the first filter, the second filter, the first combiner, and the second combiner.

94. (New) The stereo synthesizing apparatus of Claim 89 wherein the left output information and the right output information have the relatively constant phase difference over the range of frequencies.

95. (New) A method of synthesizing left and right pseudo-stereophonic output signals from a monophonic signal comprising:

filtering an input signal to produce first digital information with a first phase shift;

filtering the input to produce second digital information with a second phase shift;

combining at least a portion of the first digital information with at least a portion of the second digital information to produce first output information; and

combining at least a portion of the first digital information and at least a portion of the second digital information to produce second output information.

96. (New) The method of Claim 95 wherein the first phase shift is approximately +45° and the second phase shift is approximately -45°.

97. (New) The method of Claim 95 wherein the phase difference between the first digital information and the second digital information is approximately 90°.

98. (New) The method of Claim 95 wherein the first filter and the second filter are all-pass filters.

99. (New) The method of Claim 95 wherein combining to produce first output information is adding and combining to produce second output information is subtracting.

100. (New) The method of Claim 95 wherein the first output information and the second output information have the relatively constant phase difference over the range of frequencies.

101. (New) A signal processor that produces more outputs than inputs comprising:

a filter means for filtering an input signal to produce a first filtered signal and a second filtered signal, wherein the first filtered signal and the second filtered signal have a relatively constant phase difference over a range of frequencies; and

a combining means for combining at least a portion of the first filtered signal with at least a portion of the second filtered signal to produce a left output signal and for combining at least a portion of the first filtered signal and at least a portion of the second filtered signal to produce a right output signal.

102. (New) The signal processor of Claim 101 wherein the first filtered signal and the second filtered signal have a relatively constant phase difference of approximately 90°.

103. (New) The signal processor of Claim 101 wherein the filter means comprises a first all-pass filter configured to have a leading phase shift and a second all-pass filter configured to have a lagging phase shift.

104. (New) The signal processor of Claim 101 wherein the combining means comprises an adding means and a subtracting means.

105. (New) The signal processor of Claim 101 wherein the left output signal and the right output signal have the relatively constant phase difference over the range of frequencies.